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ABSTRACT

This paper focuses on the secondary school experiences of Hispanic students with disabilities, presenting findings from the National Longitudinal Transition Study (NLTS) of Special Education Students. The 5-year NLTS study included data on more than 8,000 students (of whom 733 were Hispanic) enrolled in special education in the 1985-86 school year. The data provided in this report were collected in 1987 from telephone interviews with parents of the NLTS Hispanic youth. The paper begins with a description of individual and family background factors, such as disability category, functional skills, youth demographics and household characteristics. It continues with a description of students' secondary school experiences including school characteristics (such as size and urbanicity) and school policies and practices regarding instructional placement and vocational education services and programs. The paper then focuses on aspects of student school performance and activities related to vocational and instructional placement experiences including absenteeism, school completion, employment during secondary school, and participation in extracurricular activities. Findings indicated that Hispanic students with disabilities were unlikely to be in racially integrated or mainstream settings, had fewer vocational training opportunities than other special education students, and were unlikely to participate in extracurricular group activities. An appendix presents background information on the NLTS. (35 references) (DB)

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April 1992

HISPANIC SECONDARY SCHOOL STUDENTS WITH DISABILITIES: HOW ARE THEY DOING?

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The National Longitudinal Transition Study of Special Education Students
SRI International

Prepared for presentation to the Hispanic Research Issues Special Interest Group of the American Educational Research Association annual meeting, San Francisco, California, April 1992

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HISPANIC SECONDARY SCHOOL STUDENTS WITH DISABILITIES: HOW ARE THEY DOING?

Students with disabilities comprise only a small portion of the student population. Being a minority group, their interests are not always considered in education policy making, as evidenced by recent education reform proposals such as "America 2000: An Education Strategy", which does not directly address educational opportunities for children with disabilities (Dey, 1991). Although young people in special education are a relatively small group of students, they are an extremely diverse group, with widely varying needs and experiences. Yet research often focuses solely on differences in types of disabilities and not on differences in other student characteristics, such as ethnicity or gender, when describing these students' experiences. Issues such as ethnicity, minority status, and bilingual education are generally perceived by the special education profession as unrelated to special education as a discipline (Yates, 1986). One group of students that is often neglected in this way are Hispanic students with disabilities.

Comprising only 8% of secondary school students with disabilities, the experiences of Hispanic students with disabilities are often reported as part of "minority/nonminority" comparisons, grouping their outcomes with those of "black, not Hispanic" and other minority students. Yet analyses from the National Longitudinal Transition Study of Special Education Students have demonstrated that the secondary school experiences of Hispanic youth with disabilities differed significantly from those of their "black, not Hispanic" and "white, not Hispanic" peers,* differences with important implications for school policy and programming.

This paper focuses on the secondary school experiences of Hispanic students with disabilities, presenting findings from the National

*Black, not Hispanic and white, not Hispanic youth will be referred to here as black and white youth.

Longitudinal Transition Study of Special Education Students (NLTS). The NLTS, funded by the Office of Special Education Programs (OSEP) of the U.S. Department of Education, was mandated by the U.S. Congress to provide information to practitioners, policymakers, researchers, and others regarding the transition of youth with disabilities from secondary school to early adulthood. This five year study, conducted by SRI International, includes a nationally representative sample of more than 8,000 students (733 of whom were Hispanic), who were ages 13 to 21 and in special education in the 1985-86 school year. The sample represents youth in all 11 federal disability categories and permits findings to be generalized nationally for each disability group.*

Data reported here were collected in 1987 from telephone interviews with parents** of youth in the study (conducted in English, or in Spanish when appropriate), and from a survey of educators in the schools they attended, and from students' school records. (Appendix A has a more detailed description of data collection, data weighting, and analyses. Appendix B lists other products available from the NLTS, including full reports on sampling and data collection methods.)

The data from these several sources draw their structure and coherence from a shared conceptual framework that characterizes the transition process from secondary school to young adulthood. This framework, depicted in Figure 1 was developed in the design phase of the NLTS and reflects what was known and hypothesized from existing research in several fields about the transition process and the factors that affect it. The framework was the basis for determining the components of the project and the contents of the data to be collected in each component. It is also the foundation for the analysis.

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* Youth are assigned to disability category based on the primary disability designated for them by the schools or districts they attended in the 1985-86 school year.)

** For 8% of youth a parent/guardian was not available to respond to the interview. These were generaly cases in which youth lived with another family member or were under the protection of the state and lived with non related adults. In such cases, the adult who was most knowledgeable about the youth was interviewed. Responses of these nonparents are included in the analyses, although interviews are referred to as "parent interviews".

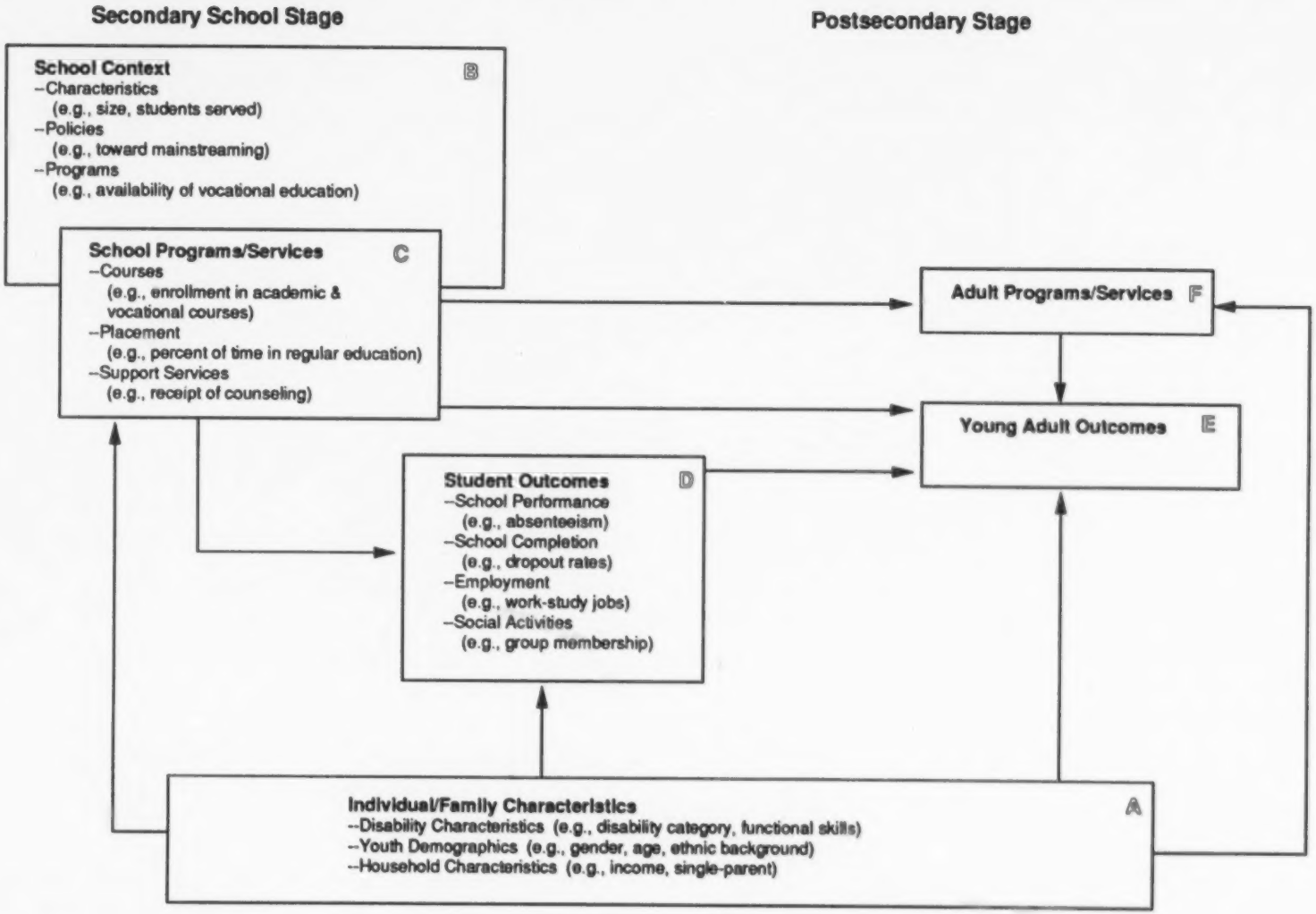


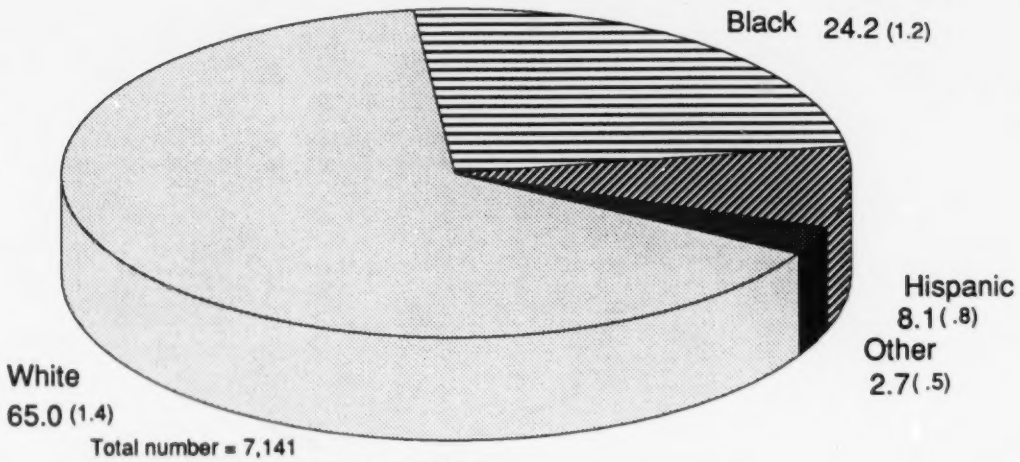
FIGURE 1 CONCEPTUAL FRAMEWORK OF TRANSITION EXPERIENCES AND OUTCOMES OF YOUTH WITH DISABILITIES

Findings from the NLTS suggest that, in many areas presented in this framework, Hispanic youth with disabilities often faced more obstacles than did other youth with disabilities. This paper will focus on the secondary school stage of the transition process, describing the experiences of Hispanic youth with disabilities, and how these experiences differed from those of their black and white peers, in each area of the secondary school section of the conceptual framework. The paper begins with a description of individual and family background characteristics, such as disability category, functional skills, youth demographics and household characteristics (box A). It continues with a description of several dimensions of students' secondary school experiences, including, school characteristics, such as size and urbanicity, and school policies and practices regarding instructional placement and vocational education services and programs (boxes B & C). The paper then focuses on several aspects of student school performance and activities that have been found to be related to vocational and instructional placement experiences, including absenteeism, school completion, employment during secondary school, and participation in extracurricular activities (box D).

Characteristics of Hispanic Students with Disabilities

To learn about students' ethnicity, parents were asked during the telephone interview to categorize their child's ethnic background as being, black, not Hispanic, white, not Hispanic, Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander or Other. Slightly more than 8% of NLTS secondary students with disabilities were identified as being Hispanic (Figure 2). The percentage of students in special education who were Hispanic was similar to the corresponding percentage (8.8%) in the general population of youth aged 15 to 19 (U.S. Department of Commerce, 1987).

FIGURE 2
ETHNIC BACKGROUND OF YOUTH WITH DISABILITIES



Total number = 7,141
Note: Standard errors are in parentheses.
Source: NLTS parent interviews and school district special education rosters.

Disability-Related Characteristics of Hispanic Students in Secondary Special Education

To understand the experiences of youth in secondary school, it is important to consider the personal characteristics and the household circumstances that are the background or context for individual development. One set of background factors relates to the abilities and disabilities that characterize special education students. What were the disabilities for which students received special education services, and did these differ by students' ethnic background?

During the 1985-86 school year (when these students were sampled from information provided by school districts), there were approximately 1.5

million special education students between the ages of 13 and 21 in schools in the United States (U.S. Department of Education, 1988). Federal assistance was made available to states based on the number of students determined to be eligible for special education services in 11 disability categories: learning disabled, emotionally disturbed, speech impaired, mentally retarded, visually impaired, hard of hearing, deaf, orthopedically impaired, other health impaired, multiply handicapped and deaf/blind.

Although there are federal definitions for these disability categories, applications of category definitions, assessment methods, and rules of thumb for categorizing students vary among states and often among school districts within states. A youth who is classified as mentally retarded in one state may be categorized as learning disabled in another and may not be eligible for special education at all in a third. Despite such variations, the school-assigned disability classification is an important indicator of disability. It is used for official counts on which some funding levels are based. In addition, how students are labeled may influence how they think of themselves and how they are treated by others.

Table 1 describes black, white and Hispanic secondary school special education students in terms of their primary disability category. Overall, Hispanic students looked similar to their peers in terms of disability category; there was no significant difference in the proportion of youth in each of the 11 categories among those who were Hispanic compared with black or white students. The only exception is that black youth were more likely to be categorized as mentally retarded than Hispanic (and white) youth, (29% of black special education students vs. 15% of Hispanic special education students were classified as mentally retarded; $p<.01$).*

Although by definition, a disability is a condition that limits an individual in the performance of particular tasks or in the enjoyment of certain activities, there are other measures of severity of disability,

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* Statistical significance is denoted by p values presenting the number of chances out of 100 that the difference occur due to chance alone.

Table 1

VARIATIONS IN DISABILITY CATEGORY BY YOUTH ETHNIC BACKGROUND

Percentage of Youth Who Were:	White	Black	Hispanic
Learning disabled	58.6 (1.7)	50.5 (3.0)	58.6 (5.3)
Emotionally disturbed	10.9 (1.1)	11.0 (1.9)	7.9 (2.9)
Speech impaired	2.8 (.6)	3.9 (1.2)	5.9 (2.5)
Mentally retarded	21.1 (1.4)	28.7 (2.7)	15.4 (3.9)
Visually impaired	.7 (.3)	.8 (.5)	.7 (.9)
Hard of hearing	1.0 (.3)	.8 (.5)	1.6 (1.4)
Deaf	.8 (.3)	.8 (.5)	1.0 (1.1)
Orthopedically impaired	1.3 (.4)	1.0 (.6)	2.4 (1.7)
Other health impaired	1.2 (.4)	1.2 (.7)	4.0 (2.1)
Multiply handicapped	1.7 (.4)	1.3 (.7)	2.5 (1.7)
Deaf/blind	*	*	*
Number	4,493	1,694	733

* Less than .1%

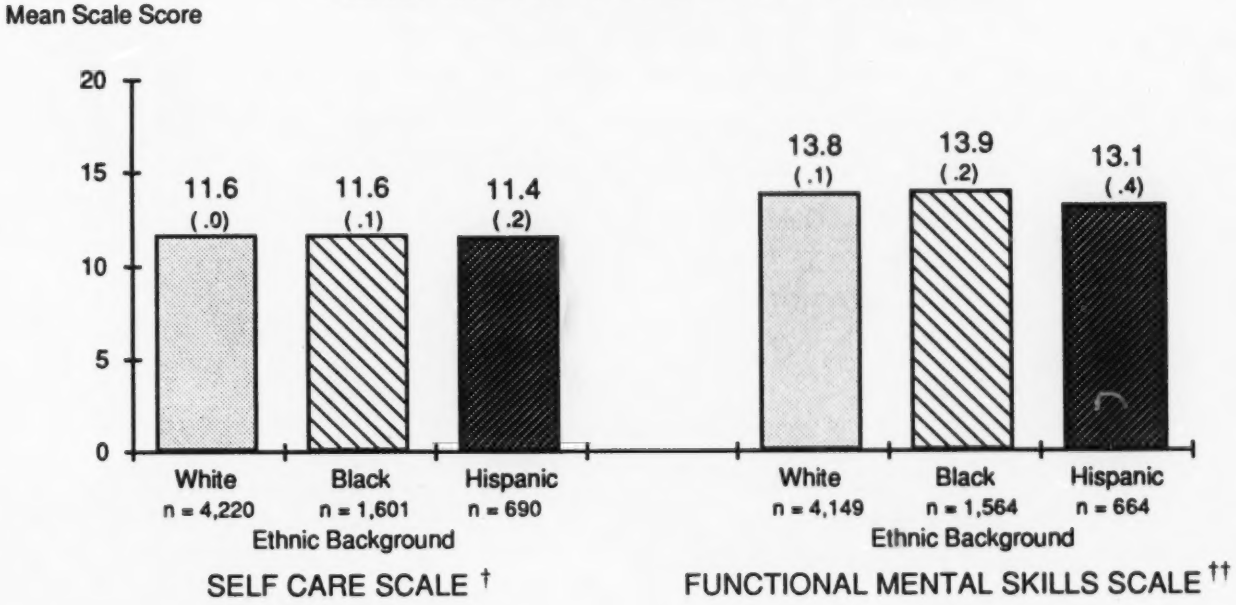
Note: Standard errors are in parentheses.

Source: Parent interviews and school district special education rosters.

beyond the disability category. To understand the impact of disabilities onvarious aspects of youths' functioning, the NLTS asked parents to assess their children's abilities to perform independently two kinds of daily living activities. The first involved very basic self-care skills; the second involved the application of selected functional mental skills to everyday tasks.

Parents were asked to report how well they believed their children could carry out three self-care tasks on their own, without help: feeding oneself, dressing oneself, and getting to places outside the home, such as a neighbor's house or a nearby park. Parents reported for each item whether youth could perform the task on their own "very well", "pretty well", "not very well", or "not at all well". To obtain a summary measure of self care-ability, we constructed a scale from the three self-care tasks by assigning a value of 4 to a response of "very well," 3 to "pretty well, 2 to "not very well", and 1 to "not at all well". By summing the three scores, we created a scale that ranges from 3 to 12. Figure 3 presents the mean self

FIGURE 3
MEAN FUNCTIONAL ABILITY SCALE SCORES



Note: Standard errors are in parentheses.
† The self care scale ranges from 3 to 12.
†† The functional mental skills scale ranges from 4 to 16.
Source: Parent interviews.

care scale score by ethnic background. Regardless of ethnic background, students scored fairly high on this scale, receiving a mean score of greater than 11, out of a possible 12 points. There was no significant difference in the performance of Hispanic, white or black students on this self care scale.

A second functional ability measure focused on the tasks involved in applying basic mental functions to everyday activities: counting change, telling time on a clock with hands, looking up telephone numbers and using the phone, and reading common signs. Parents rated their children's abilities on each task on a 4-point scale ranging from the ability to do the task "very well" (4 points) to "not at all well" (1 point). Scores on the 4 tasks were summed to create a scale ranging from 4 (did all 4 tasks "not at all well") to 16 (did all 4 tasks "very well"). Here Hispanic youth again performed similarly to their peers (Figure 3). Hispanic youth averaged a medium-range score of 13.1; not significantly different than the scores of 13.8 and 13.9 averaged by white and black students with disabilities.

Hispanic students with disabilities do not differ from their peers in severity of disability, as measured by disability category and functional ability categories. Since their abilities are similar, one would expect their school programs to be similar as well; yet when we examine their school experiences, we find that these experiences are not the same.

Demographic Characteristics of Hispanic Students in Secondary Special Education

A second set of factors that are important to understanding the experiences of special education students consists of demographic descriptors of youth and the households from which they came. In addition to disability-related factors, a large body of literature suggests that student demographic characteristics are related to school performance. (See, for

example, Rumberger, 1987; Fetters, Brown, and Owings, 1984; Jones et al., 1983; Bachman, 1970; Eckstrom et al., 1986; Jencks et al., 1972; U.S. General Accounting Office, 1986; Pallas, Natriello, and McDill, 1988; Peng and Takai, 1987; Scott-Jones, 1984; U.S. Bureau of the Census, 1987).

As presented in Table 2, Hispanic youth with disabilities did not significantly differ from their peers in terms of individual characteristics, such as age or gender. Average age was similar for black, white and Hispanic special education students. Hispanic special education students were not significantly more or less likely to be male, as compared with black and white special education students.

Although Hispanic students with disabilities did not appear to differ from their peers in the severity of their disabilities, and in other characteristics, such as age and gender, their families did differ from other families in important ways. Hispanic special education students were more likely to come from poorer, less well educated families, where a language

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Table 2

INDIVIDUAL CHARACTERISTICS OF SECONDARY SCHOOL AGE YOUTH WITH DISABILITIES BY ETHNIC BACKGROUND

Individual Characteristics	Ethnic Background		
	White	Black	Hispanic
Percentage who were male	70.6 (1.6)	66.9 (2.8)	60.3 (5.3)
Average age	17.5 (0.1)	17.6 (0.1)	17.3 (0.2)
Number of respondents	4,493	1,694	733

Note: Standard errors are in parentheses.

Source: Parent interviews and school district special education rosters.

other than English was more likely to be spoken. Socioeconomic characteristics of a youth's household can influence many aspects of his or her development. The level of income can affect the educational resources and experiences to which a youth has access. The educational level of adults in the household can set the standard and expectations for a child's educational achievement.

As indicated in Table 3, Hispanic families had several indicators of lower socioeconomic status. More than a quarter of Hispanic youth with disabilities usually spoke a language other than English at home. Not surprisingly, this percentage is much higher than for those who were black (.2% usually spoke another language at home; $p<.001$) or white (.3% usually spoke another language at home; $p<.001$). Hispanic families were significantly more likely to be single parent households than were white families (44% vs. 25%; $p<.05$), but less likely than were black families (44% vs. 64%; $p<.001$). Examining household income and head of household education we continue to see differences between black, white and Hispanic households.

Parents of Hispanic youth with disabilities had completed the least amount of formal education. More than 68% of Hispanic youth came from families where the head of household had not completed high school, as compared with 55% of black youth ($p<.05$) and 33% of white youth ($p<.001$). They also were more likely than white students to come from poorer families. Almost half (49%) lived in households with an annual income of less than $12,000 per year, as compared with 25% of white households with incomes below $12,000 ($p<.01$).

School Context

Students bring their diverse backgrounds and abilities to schools, yet the schools they attend are also not homogeneous. Schools differ in characteristics, such as size and urbanicity, and in the the programs and

Table 3

HOUSEHOLD CHARACTERISTICS OF SECONDARY SCHOOL AGE YOUTH WITH DISABILITIES BY ETHNIC BACKGROUND

Household Characteristics	Ethnic Background		
	White	Black	Hispanic
Percentage who spoke at home:			
English	97.3	97.3	70.9
	(0.6)	(1.0)	(5.0)
Another spoken language	0.3	0.2	25.1
	(0.2)	(0.3)	(4.8)
Percentage in households with:			
A single parent	25.4	64.4	43.5
	(1.6)	(3.0)	(5.5)
Percentage with head of household with highest education being:			
11th grade or less	33.2	54.6	68.3
	(1.7)	(3.1)	(5.2)
High school diploma	38.6	32.2	22.3
	(1.8)	(2.9)	(4.6)
Some college or 2 year degree	17.0	10.3	5.5
	(1.4)	(1.9)	(2.5)
4-year college degree or more	11.3	2.8	3.8
	(1.2)	(1.0)	(2.1)
Percentage in households with:			
Average household income less than $12,000	25.1	56.8	49.0
	(1.6)	(3.2)	(6.0)
Number of respondents	4,416	1,671	704

Note: Standard errors are in parentheses.

Source: Parent interviews.

services they offer. Here we will describe the secondary schools attended by Hispanic students with disabilities, and compare these schools, and the programs provided, to those attended by and provided to other students.

One important distinguishing feature of a student's educational program is the type of school he or she attends. The vast majority of secondary students with disabilities attended regular (comprehensive) schools, regardless of ethnic background. As indicated in Table 4, 10% of Hispanic and black, and 8% of white special education students attended a special school that served only students with disabilities.

Secondary schools attended by Hispanic special education students were usually large (average enrollment of 1,339 students) and located in urban areas (64% urban schools). When comparing schools attended by Hispanic students with those attended by other students, their schools were larger (average enrollment of 1339 students vs. 877 students for schools attended by white students, $p<.001$ and 1052 students for schools attended by black students, $p<.05$), and more likely to be in an urban area (64% vs. 16%; $p<.001$) than schools attended by white students. Some research has suggested that such large schools create an environment in which students may find it difficult to establish bonds of affiliation with teachers, groups of students, and the school as an institution unless a conscious effort is made to build a sense of community and identification with the school (Grabe, 1981; Pittman and Haughwout, 1987; Wehlage et al., 1989).

Hispanic students in the general population were found, by a study undertaken by the National School Boards Association, to have become more segregated than black students in American schools (Orfield, 1991). NLTS confirms these findings for Hispanic students in special education. Hispanic youth with disabilities were more likely to attend schools that had a large minority student enrollment than were black or white students with disabilities. Almost 75% of Hispanic students attended schools where more than half of the students were minorities, compared with 60% of black students ($p<.05$) and 6% of white students ($p<.001$). In addition, Hispanic

Table 4

SCHOOL CHARACTERISTICS BY ETHNIC BACKGROUND

Characteristics	Ethnic Background		
	White	Black	Hispanic
Percentage whose school was a:			
Comprehensive secondary school	89.9 (1.2)	84.0 (2.6)	80.2 (4.9)
Special school for students with disabilities	7.8 (1.0)	10.5 (2.2)	10.5 (3.8)
Vocational/technical school	1.1 (.4)	4.0 (1.4)	3.2 (2.1)
Other type of school	1.2 (.4)	1.5 (.9)	6.1 (2.9)
Average enrollment	877	1,052	1,339
Percentage that attended school in an area that was:			
Urban	16.4 (1.4)	66.0 (3.1)	64.3 (5.6)
Suburban	42.5 (1.8)	15.7 (2.4)	13.2 (4.0)
Rural	41.1 (1.8)	18.3 (2.6)	22.6 (4.9)
Percentage with minority student enrollment of:			
More than 50%	6.0 (.9)	60.2 (3.5)	74.8 (5.4)
Percentage in schools with low income enrollment of:			
More than 50%	12.2 (1.3)	37.2 (3.4)	51.6 (6.3)
Number of respondents	3,766	1,276	563

Note: Standard errors are in parentheses.
Source: Survey of Secondary Special Education Programs.

youth with disabilities were the most likely to attend schools with high percentages of low income students. Schools attended by 52% of Hispanic students had more than half of their students living in poverty, compared with 37% of black students ($p<.05$) and 12% of white students ($p<.001$).

School Policies and Practices Regarding Instructional Placement

The educational experiences of students in special education are shaped not only by the characteristics of their schools but by the environment in which their courses are taken. A key element of the instructional environment is the nature of the students in it; whether these students are primarily regular education or special education students.

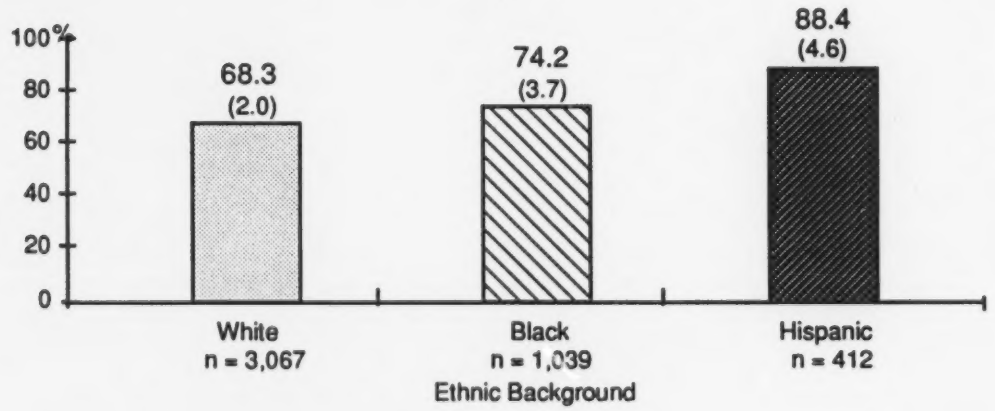
Students in secondary special education traditionally receive their education in a variety of instructional settings, varying primarily in the degree to which special education students are integrated into the regular education system, with regular education students. Whether students with disabilities take courses in regular education can affect their social relationships and behaviors; in regular education classes they have an opportunity to form friendships with and model the behavior of nondisabled students. Equity concerns also encourage integration so that all students who can benefit from regular education instruction have the opportunity to do so. Hence, the maximum appropriate integration of special education students with the general student population is the specific intent of the "least restrictive environment" provision of P.L.94-142, which seeks to ensure that:

> to the maximum extent appropriate, handicapped children...are educated with children who are not handicapped, and that special classes, separate schooling, or other removal of handicapped children from the regular education environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily.

To learn about instructional placement, schools were asked to report the types of classroom placements available to students with disabilities at

their school. Figure 4 presents the percentage of schools where self contained classrooms were placement options for secondary special education students. On the continuum of instructional placements, self contained classrooms (where students spend the majority of the day in a special education classroom) is usually the most segregated type of education delivery system. Hispanic students were the most likely to attend schools that provided instruction in self-contained classrooms; 88% of Hispanic students attended schools that offered instruction in self contained classrooms, as compared with 74% black students ($p<.05$) and 68% white special education students ($p<.001$).

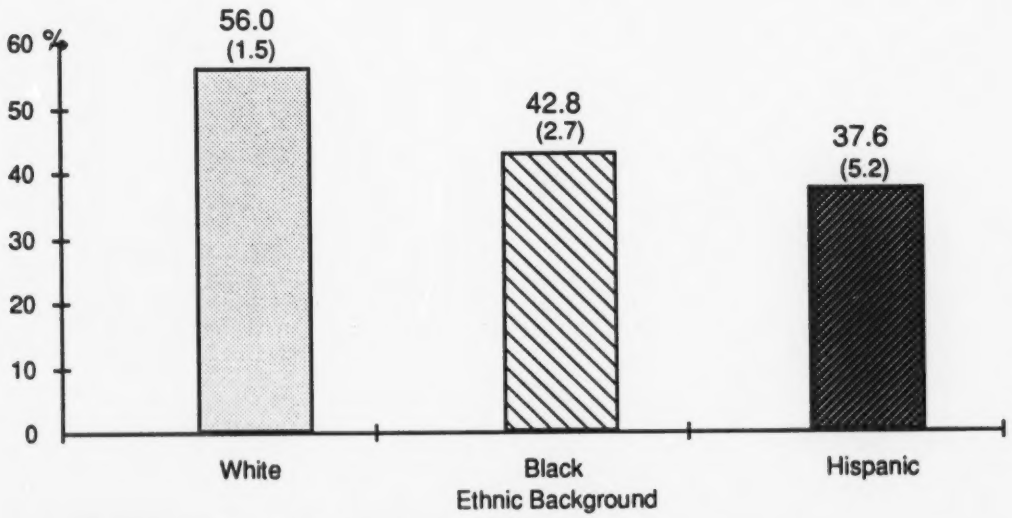
FIGURE 4
PERCENTAGE OF STUDENTS WITH DISABILITIES IN SECONDARY SCHOOLS WITH SELF-CONTAINED CLASSROOMS



Note: Standard errors are in parentheses.
Source: Survey of Secondary Special Education Programs.

Although schools attended by Hispanic students were more likely to offer self-contained classrooms as a placement option, actual classroom placement might not differ for Hispanic students; Hispanic students might be no more likely to spend their day in self contained classrooms. To learn about student instructional placement, student school records were reviewed. As indicated in Figure 5, NLTS found that Hispanic students spent the lowest average percentage of class time in regular education classrooms (38% time spent in regular education vs. 56% for white students ($p<.001$) and 43% for black students (although not significantly). As we learned earlier, Hispanic special education students attended schools that were more likely to be racially segregated; within these segregated schools these special education students were more likely to be further segregated: this time from their regular education peers.

FIGURE 5
AVERAGE PERCENTAGE OF CLASS TIME SPENT IN REGULAR EDUCATION CLASSES FOR STUDENTS WITH DISABILITIES



Note: Standard errors are in parentheses.
Source: Student school records. Data are for the student's most recent year in secondary school.

School Policies and Practices Regarding Vocational Education Services and Programs

As described earlier, Hispanic students with disabilities attended schools that differed from other schools in significant ways, such as size, urbanicity and minority enrollment. They also spent less time during their school day with their regular education peers. In addition to differences in schools' policies on mainstreaming, schools also varied widely on the amount and types of vocational education offered to special education students.

A student's educational program is constrained by the program options available in his or her school. The types of services available at a school affects the likelihood of a student receiving these services. Not all students have equal access to all options because of variations among schools in the resources available for programs and the policy and programmatic emphases that lead them to stress some kinds of programs over others (Fairweather, Stearns, and Wagner, 1989). Of particular relevance to many students with disabilities are programs that provide vocational training. Among the several characteristics of programs that are thought to be effective in helping students establish school bonds is the perception by students that programs are relevant to their interests and appropriate to their abilities. For many students who are not college bound, vocational education offers the potential for both relevance and appropriateness (Weber, 1987) and often is cited as one element in a strategy to prevent early school leaving (Hahn, Danzberger, and Lefkowitz, 1987).

One group for whom vocational education may be particularly relevant and appropriate is students with disabilities. These students are less likely than students as a whole to be college bound (Butler-Nalin and Wagner, 1991) and often need training in both work-related behaviors and specific job skills if they are to function effectively in the competitive job market when they leave high school.

How did schools attended by Hispanic students with disabilities compare with schools attended by other students with disabilities in terms of the availability of vocational programs and services? Here we will be focussing first on school policies regarding types of vocational services offered at these schools and then on the extent to which such variation carried over to the vocational activities and courses experienced by students.

School Policies Regarding Vocational Education

Staff in schools attended by NLTS students in their most recent school year responded to a mail survey that asked them about the availability of vocational programs for students in secondary special education in their schools (whether particular programs were "routinely provided"). NLTS analyses reveal some variation in the kinds of programs reported as available to students; fewer vocational training opportunities and experiences were available to Hispanic students with disabilities than to other students.

As presented in Table 5, schools attended by Hispanic students with disabilities were as likely as schools attended by other students to report offering job counseling and job readiness training. However as we shift attention from these general job preparation programs to programs emphasizing specific skills, we find that Hispanic youth were less likely to attend secondary schools that offered specific job skills training to special education students (57%) than were black students (73%; $p<.05$) or white students (72%; $p<.05$).

They also were less likely to attend schools that used formal assessment of student vocational interests and skills than were black students (68% vs. 83%; $p<.05$), or white students (82%; $p<.10$), and less likely to attend schools that gave students information about careers (schools attended by 79% of Hispanic students provided information vs. schools attended by 92% of black students ($p<.05$) and schools attended by 92% of white students ($p<.05$).

Table 5

VOCATIONAL EDUCATION SERVICES AND PROGRAMS AVAILABLE IN SCHOOLS ATTENDED BY SECONDARY STUDENTS WITH DISABILITIES BY ETHNIC BACKGROUND

Characteristics	Ethnic Background		
	White	Black	Hispanic
Percentage in schools that made available to secondary special education students:			
Job counseling	92.7 (1.1)	86.7 (2.6)	87.7 (4.3)
Job readiness training	84.9 (1.5)	89.1 (2.4)	89.3 (4.0)
Specific job skills training	71.8 (1.8)	73.4 (3.4)	57.1 (6.6)
Percentage in schools that:			
Used formal assessment of student interest/skills	81.4 (1.6)	82.8 (3.0)	68.2 (6.8)
Gave students information about alternative careers	91.9 (1.1)	92.0 (2.1)	79.1 (5.9)
Recommended specific careers	72.8 (1.9)	75.4 (3.4)	65.2 (6.9)
Recommended specific training/education	75.7 (1.8)	80.4 (3.1)	71.5 (6.6)
Percentage in schools with at least monthly contact with:			
State Vocational Rehabilitation Agency (VR)	26.3 (1.9)	29.3 (3.7)	17.2 (5.1)
Vocational postsecondary schools	28.4 (1.9)	25.6 (3.6)	18.0 (5.5)
Number of respondents	3,064	972	407

Note: Standard errors are in parentheses.
Source: Survey of Secondary Special Education Programs.

Continuing this pattern of fewer vocational services available during school years, schools attended by Hispanic special education students were less likely to be focusing on the vocational links to adult vocational services during the transition period from school to adulthood. Schools attended by Hispanic special education students were less likely to have at least monthly contact with Vocational Rehabilitation agencies. Schools attended by 17% of Hispanic students had at least monthly contact with State Vocational Rehabilitation agencies, compared with schools attended by 29% of black students ($p<.10$), and schools attended by 26% of white students ($p<.10$). In addition, Hispanic students with disabilities were less likely to attend schools that had monthly contact with post secondary vocational schools (18% vs. 28% of white students ($p<.10$), 26% of black students (n.s.).

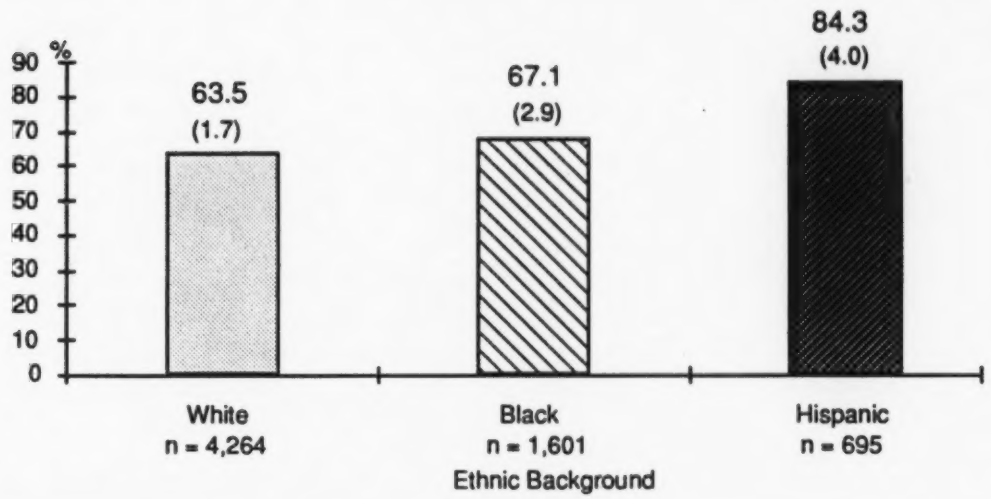
Student Vocational Activities

Here we shift our focus from school-level policies and course offerings, to actual vocational course taking activities and experiences of individual students, using data obtained from school records from students' most recent year in secondary school, and from parent report.

We find that more than 84% of Hispanic students with disabilities had never received vocational services, compared with 67% of black students ($p<.001$) and 64% of white students ($p<.001$) (Figure 6). By having never received any vocational services, Hispanic students were missing out on a wide range of vocational activities; vocational activities could include vocational education, job skills training, prevocational skills training, career counseling, job placement, or other job-related services. Those Hispanic students who had received vocational services received fewer hours of service (107 hours) than did black (129 hours; $p<.05$) or white students (150 hours; $p<.05$).

These findings are particularly disturbing because earlier NLTS analyses suggest that students who had received vocational education were

FIGURE 6
PERCENTAGE OF SECONDARY STUDENTS WITH DISABILITIES HAVING NEVER RECEIVED VOCATIONAL SERVICES* BY ETHNIC BACKGROUND



* Vocational services include vocational education, job skills training, prevocational skills training, career counseling, job placement, or other job-related services.
Note: Standard errors are in parentheses.
Source: Parent interviews and student school records.

significantly more likely than nonparticipants to register positive outcomes, independent of characteristics of students who were enrolled (Wagner,1991b). Students who took vocational courses had significantly lower absenteeism from school and a significantly lower probability of dropping out of school, when demographic and disability differences between students were controlled.

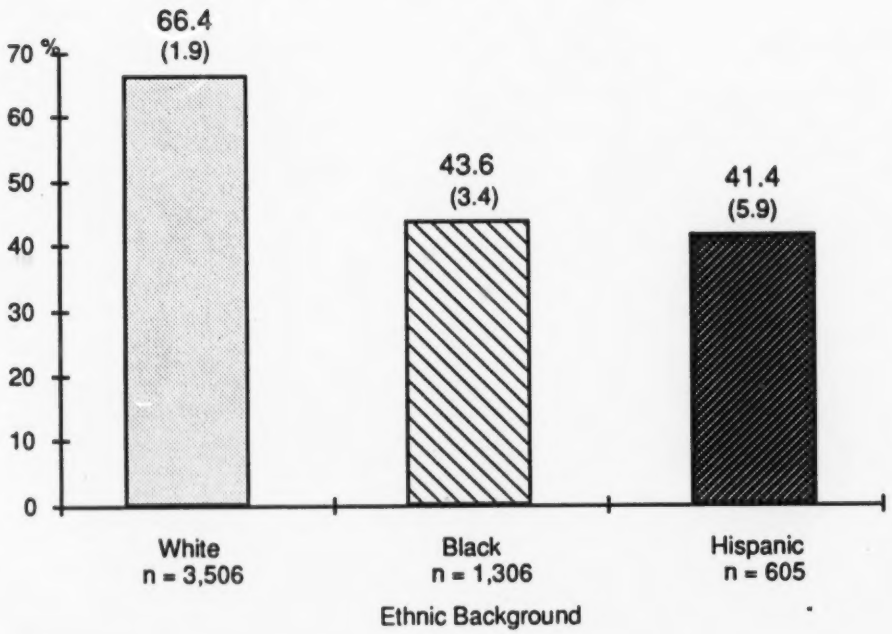
Other Student Activities

Independent of its effects on students' decisions to drop out, having had vocational training was found by the NLTS to be significantly related to a higher likelihood of finding competitive jobs (Wagner, 1991b). Work experience during high school has been identified as imperative to preparing

special education students fully for a successful transition to adulthood, both by exposing students to the community and work expectations, and by exposing future employers and coworkers to their potential as reliable employees (Hasazi, 1985, Wehman, Kregel and Barcus, 1985).

Figure 7 presents the extent to which high school students with disabilities were gaining work experience. Although slightly more than forty percent of Hispanic students with disabilities had been employed in the 12 months prior to the interview, this was still significantly fewer than the 66% of white students with disabilities who had been employed during this period ($p<.001$).

FIGURE 7
EMPLOYMENT DURING SECONDARY SCHOOL:
YOUTH HAD JOB IN PAST YEAR



Note: Standard errors are in parentheses.
Source: NLTS parent interviews.

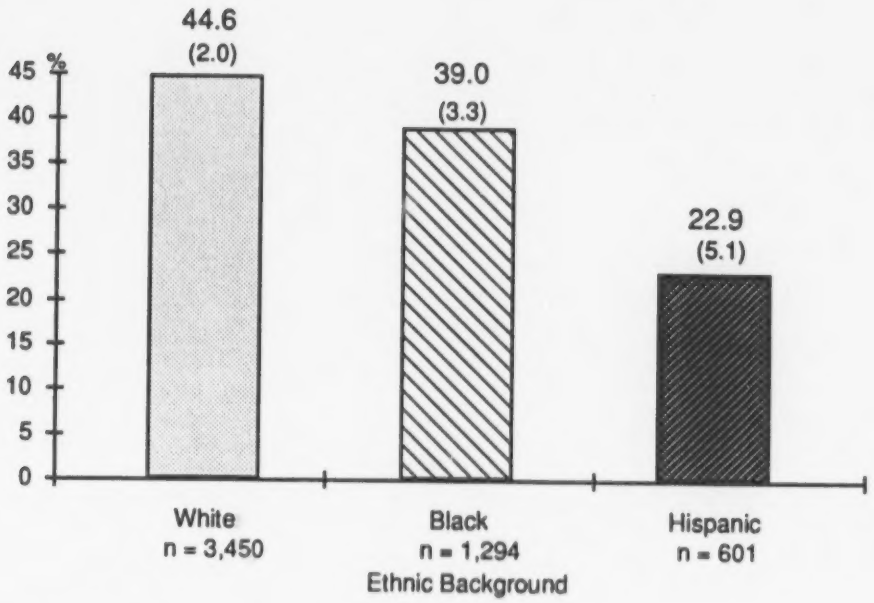
Vocational education is one element that might influence the extent to which students develop bonds with their schools. Social activities, especially participation in groups, have also often been cited as important contributors to school bonding.

As indicated earlier, previous research has documented the importance of students bonding with their schools (Wehlage et al., 1989; Finn, 1989). This social bonding often is seen in a student's commitment to the norms of the school, in the involvement in school activities, and in an affiliation with school groups. Participation in extracurricular groups in secondary school has been correlated with higher levels of self-esteem, increased student engagement, more expressed satisfaction with school, and increased likelihood of school completion (Pittman and Haughwout, 1987; Holland and Andre, 1987). Earlier NLTS research reported that youth with disabilities who belonged to groups had significantly lower absenteeism and a lower probability of course failure than students who were not affiliated. Extracurricular activity also was linked in to a lower likelihood of early school leaving (Wagner, 1991).

To learn about students' group participation, parents of youth with disabilities were asked whether their children had belonged to any school or community groups in the previous year. As presented in Figure 8, Hispanic youth (23%) were significantly less likely to participate in groups than those who were white (45%; $p<.001$) or black (39%; $p<.01$).

There are many factors related to whether or not a student participates in extracurricular activities, including disability related factors, demographic, household, cultural, community and school characteristics. Yet, in light of findings on the relative segregation of Hispanic students with disabilities from their regular education peers, one particularly interesting factor is the relationship of mainstreaming to group participation. An important goal of mainstreaming is to provide students with disabilities access to and constructive interaction with nonhandicapped

FIGURE 8
GROUP PARTICIPATION IN PAST YEAR



Note: Standard errors are in parentheses.
Source: NLTS parent interviews.

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peers (Johnson and Johnson, 1980). Earlier NLTS multivariate analysis supported this expectation that there were social benefits to being mainstreamed; students who spent more hours in regular education classrooms not only were less likely to be socially isolated, but also were significantly more likely to participate in groups, even when the nature and severity of the youth's disability was controlled (Newman, 1991).

Secondary School Performance

The NLTS conceptual framework presented earlier in this paper specified factors expected to relate to school performance, factors such as individual and family characteristics, school context and school programs and

services. As we examined these factors we found that Hispanic youth with disabilities encountered obstacles in each of these areas. Their families were poorer and less well educated. They were more likely to attend large, urban schools with high minority and low income student enrollment. They were more likely to be segregated from their regular education peers. Their schools were less likely to offer specific job skills training to special education students. They were less likely to have ever received vocational services, to have been employed in the previous year and to have participated in extracurricular activities. Examining school performance, as measured by absenteeism and dropout rates, do Hispanic special education students continue to differ from their black and white counterparts?

As indicated in Table 6, Hispanic students with disabilities were significantly more likely to be absent from school than other students with disabilities. Hispanic special education students averaged 22 absent from school in a school year, as compared with an absenteeism rate of 17 day for black students ($p<.10$) and 13 days for white students ($p<.001$).

Table 6

SECONDARY SCHOOL PERFORMANCE OF YOUTH WITH DISABILITIES

School Outcomes	Ethnic Background		
	White	Black	Hispanic
Average days absent in most recent year	12.9	16.9	22.0
	(0.6)	(1.3)	(2.7)
Percent absent more than 30 days	9.9	15.8	26.5
	(1.3)	(3.0)	(6.6)
Number of respondents	2,775	968	347
Percentage of out-of-school youth who had dropped out of school	31.2	30.4	36.9
	(2.5)	(4.3)	(9.7)
Number of respondents	1,676	615	209

Note: Standard errors are in parentheses.
Source: Student school records and parent reports. Data are for the students' most recent year in school.

Shifting our focus to dropout rates, although the rate of Hispanic students leaving secondary school by dropping out was higher (37% dropped out) than the rates for black (30% dropped out) or white (31% dropped out) students, these differences are not statistically significant, possibly due to the large standard errors (few students had left school by the time of the first interview).

Current NLTS analyses focussing on out-of-school outcomes are clearl documenting the advantages of completing secondary school. Dropping out makes life much harder after school. Dropouts were less likely than graduates to have been employed, and to have attended postsecondary school (Wagner,et al., 1992). These findings raise concerns about the secondary school experiences of Hispanic youth with disabilities.

Summary

NLTS findings have demonstrated that the secondary school experiences of Hispanic students with disabilities differ significantly from those of their black and white peers. Hispanic youth with disabilities were more likely to attend large, urban schools, with a large low income student enrollment In addition, NLTS confirms findings that Hispanic students have become more segregated than black students in American schools. Hispanic students with disabilities were more likely to attend schools that had a large minority student enrollment than were black or white students.

In addition to these contextual differences, schools significantly differed in their policies and practices regarding instructional placement and vocational instruction. Not only were Hispanic special education students more likely to attend schools that were racially segregated, within these segregated schools these special education students were more likely to be further segregated: this time from their regular education peers. Hispanic students spent the lowest average percentage of class time in regular education classrooms.

NLTS analysis reveal that fewer vocational training opportunities and experiences were available to Hispanic students with disabilities. Secondary schools attended by Hispanic youth were less likely to offer specific job skills training to special education students. Their schools were also less likely to use formal assessment of student vocational interests and skills. Continuing this pattern of fewer vocational services available during school years, schools attended by Hispanic special education students were less likely to be focusing on the vocational links to adult vocational services during the transition period from school to adulthood. Their schools were less likely to have frequent contact with Vocational Rehabilitation agencies and with postsecondary vocational schools. With these school practices regarding vocational education it is not surprising that Hispanic students with disabilities were more likely than their black and white peers to have never received vocational services, such as vocational education, job skills training, prevocational skills training, career counseling, job placement or other job-related services.

One additional student activity that was examined was the participation in extracurricular group activities. There are many factors related to whether or not a student participates in extracurricular activities. One of these factors, demonstrated by earlier NLTS analysis, was the relationship between group participation and being mainstreamed in regular education classes; students who spent more hours in regular education classrooms were significantly more likely to participate in extracurricular groups, even when the nature and severity of the youth's disability was controlled (Newman, 1991). Hispanic students with disabilities spent the least amount of time with their regular education peers. They were also significantly less likely to participate in groups.

These findings are particularly disturbing because earlier NLTS analyses suggest that students who participated in groups were significantly more likely to show positive school outcomes, such as lower absenteeism, and those who had received vocational education were significantly more likely than

nonparticipants to register positive outcomes, such as lower absenteeism, lower dropout rates and higher likelihood of finding competitive jobs, independent of characteristics of students who enrolled (Newman, 1991; Wagner, 1991). In examining school performance we find that Hispanic students with disabilities were significantly more likely to be absent from school than other students with disabilities. Dropout rates were also slightly higher for Hispanic special education students (although not statistically significant).

Although these findings raise concerns about the secondary school experiences of Hispanic students with disabilities, there is some cause for optimism in the future. The 1990 Amendments to the Education for the Handicapped Act, P.L. 101-476, (now known as the Individuals with Disabilities Education Act - IDEA) made several significant changes that should benefit Hispanic youth with disabilities. These amendments authorized several programs for the purpose of:

"conducting studies, analyses, syntheses, and investigations for improving program management, administration, delivery and effectiveness necessary to provide full educational opportunities and early interventions for all children with disabilities from birth through age 21. Such studies and investigations shall gather information necessary for program and system improvements including -
(A) developing effective, appropriate criteria and procedures to identify, evaluate and serve infants, toddlers, children, and youth from minority backgrounds for purposes of program eligibility, program planning, delivery of services, program placement, and parental involvement" (IDEA, section 1418, 1990)."

In addition to authorizing new programs, Congress recommended the implementation of a "policy to mobilize the Nation's resources to prepare minorities for careers in special education and related services (IDEA, section 1409, 1990). This would be particularly helpful for the 25% of Hispanic students with disabilities for whom English is not the primary language, who pose special challenges for special education. There is a strong need for educators that are able to deliver integrated services that account both for children's second language and disability characteristics

(Cloud, 1988; Yates, 1986). Recruiting appropriate school personnel, who have received training in the theoretical and practical issues in serving limited English proficient students in special education, might begin to address these needs.

These changes in the Individual with Disabilities Education Act resulted from a Congressional awareness that "the Federal Government must be responsive to the growing needs of an increasingly more diverse society...where minorities and underserved persons are socially disadvantaged because of the lack of opportunities in training and educational programs" (IDEA, 1990). There is hope that with this increased awareness and mandated programs, the needs of Hispanic youth with disabilities will be better addressed.

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Appendix A
BACKGROUND INFORMATION ON THE NLTS

This appendix provides somewhat greater detail on several methodological aspects of the NLTS, including:

- Data collection components.
- Sampling of districts, schools, and students.
- Weighting of NLTS data.
- Estimation and use of standard errors.
- Construction of comparison groups from the general population using the National Longitudinal Survey of Youth (U.S. Department of Labor).

Components of the NLTS

The NLTS has several components:

- ***The Parent/Youth Survey.*** In the summer and fall of 1987, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, the youths' educational attainments (including postsecondary education), employment experiences, and measures of social integration. Parents rather than youth were selected as respondents for the first wave of data collection because of the need for family background information and because, with most students still being in secondary school and living at home, parents were believed to be accurate respondents for the issures addressed. The survey was repeated in 1990, when youth were interviewed if they were able to respond.
- ***School Records.*** In 1987 information was abstracted from students' school records for the most recent year in secondary school (either the 1985-86 or 1986-87 school year). This information related to courses taken, grades received (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum competency testing. School transcripts were collected in 1990 for youth who had been in secondary school at any time since the 1986-87 school year.
- ***School Program Survey.*** In 1987, schools attended by sample students in the 1986-87 school year were surveyed for information on enrollment, staffing, programs and related services offered to secondary special education studnets, policies affecting special education programs and students, and community resources for the disabled.
- ***Student School Program Survey.*** In 1990, this survey obtained information about youth who still were in secondary school. Respondents were teachers familiar with students' school programs. They reported about students' in-class performance, class size, school climate, and transition planning activities that had occurred for each student.
- ***Explanatory Substudies.*** Studies involving subsamples of youth in selected disability categories examined in greater depth students' secondary school programs, the patterns of transition outcomes achieved by youth who were out of secondary school, and the relationship between school experiences and outcomes. Data were collected for in-school youth in 1988 and 1989 and for out-of-school youth in 1989.

The NLTS Sample

The initial NLTS sample was constructed in two stages. A sample of 450 school districts was selected randomly from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) students in special education,* which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and student enrollment. Because not enough districts agreed to participate, a replacement sample of 178 additional districts was selected. More than 80 state-supported special schools serving secondary-age deaf, blind, and deaf-blind students also were invited to participate in the study. A total of 303 school districts and 22 special schools agreed to have their students selected for the study.

Analysis of the potential bias of the district sample indicated virtually no systematic bias that would have an impact on study results when participating districts were compared to nonparticipants on several characteristics of the students served, participation in Vocational Rehabilitation programs, the extent of school-based and community resources for the disabled, the configuration of other education agencies serving district students, and metropolitan status (see Javitz, 1990 for more information on the LEA sample). The one exception was a significant underrepresentation of districts serving grades kindergarten through eight. Many of these districts did not consider themselves as secondary school districts, even though they served grades seven and eight, which are considered secondary grade levels. In addition, bias may exist on factors for which data were not available for such comparisons.

Students were selected from rosters compiled by districts, which were instructed to include all students in special education in the 1985-86 school year who were in grades 7 through 12 or whose birthdays were in 1972 or before, whether or not they were served within the district or outside the district (e.g., in state-supported residential schools). Rosters were stratified into 3 age groups (13 to 15, 16 to 18, over 18) for each of the 11 federal special education disability categories and youth were randomly selected from each age/disability group so that approximately 800 to 1,000 students were selected in each disability category (with the exception of deaf-blind, for which fewer than 100 students were served in the districts and schools included in the sample).

In part because of the time lapse between sample selection and data collection, many students could not be located at the addresses or telephone numbers provided by the schools. Of the 12,833 students selected for the sample, about one-third could not be reached by telephone for the 1987 parent interview. (For more than half of these, addresses and telephone

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* The 1983 Quality Education Data, Inc. (QED) database was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado. Special education cooperatives and other special service units were not sampled directly (83% of special education students are served directly by school districts; Moore et al., 1988). However, instructions to districts for compiling student rosters asked districts to include on their listing any students sent from their district to such cooperatives or special service units. Despite these instructions, some districts may have underreported students served outside the district.

numbers were not provided by the schools/districts from which they were sampled.) This relatively high rate of inability to reach sample members confirmed the importance of including in the NLTS a substudy of nonrespondents to determine whether those who were reached for the telephone interview were a representative sample of the population to which the study was intended to generalize. To identify whether bias existed in the interview sample, interviewers went to 28 school districts with relatively high nonresponse rates to locate and interview in person those who could not be reached by telephone. Of the 554 sought for in-person interviews, 442 were found and interviewed, a response rate of 80%. A comparison of telephone interview respondents with in-person interview respondents showed that the telephone sample underrepresented lower-income households. The sample was reweighted to adjust for that bias, as described in the next section.

Data from 1990 on trends in postschool outcomes are based on the responses of 1,990 youth who satisfied four conditions: 1) they were enrolled in special education at a secondary school in the 1985-86 school year, 2) they left secondary school by September 1987, 3) their parent or guardian completed an interview in the wave 1 data collection effort, and 4) either the parent or youth completed a telephone interview or mail questionnaire in the wave 2 data collection effort. These youth were weighted to represent all youth enrolled in special education in the 1985-86 school year who had left secondary school by September 1987.

Weighting Procedures and the Population to Which Data Generalize

Youth with disabilities for whom data could be gathered were weighted to represent the U.S. population of students in special education in the 1985-86 school year who were in grades 7 through 12 or at least 13 years old. Because it is a sample of students at various ages, the NLTS sample does not generalize to youth who had dropped out of school before that age. For example, the sample of 18-year-olds generalizes to youth who were 18 and still in secondary school in 1985-86, not to all 18-year-olds with disabilities, many of whom may had left school at an earlier age.

In performing sample weighting for wave 1 (1987), three mutually exclusive groups of sample members were distinguished:

(A) Youth whose parents responded to the telephone interview.

(B) Youth whose parents did not respond to the telephone interview but were interviewed in person.

(C) Youth whose parents did not respond to either the telephone or in-person interviews but for whom we obtained a record abstract.

A major concern in weighting was to determine whether there was a nonresponse bias and to calculate the weights in such a way as to minimize that bias. There was a potential for three types of nonresponse bias:*

(1) Bias attributable to the inability to locate respondents because they had moved or had nonworking telephone numbers.

(2) Bias attributable to refusal to complete an interview (only 3% of those available to be interviewed refused).

(3) Bias attributable to circumstances that made it infeasible to locate or process a student's school record.

Of these three types of nonresponse, the first was believed to be the most frequent and to have the greatest influence on the analysis. Type 1 bias also was the only type of nonresponse that could be estimated and corrected.

The magnitude of type 1 nonresponse bias was estimated by comparing responses to items available for the three groups of respondents (after adjusting for differences in the frequency with which youth in different disability categories were selected and differences in the size of the LEAs selected). Group A was wealthier, more highly educated, and less likely to be minority than group B. In addition, group A was more likely to have students who graduated from high school than groups B or C (which had similar dropout rates). Groups A and B were compared on several additional measures for which data were unavailable for group C. The youth described by the two groups were similar on these additional items, including gender, employment status, pay, functional skills, association with a social group, and length of time since leaving school. Adjusting sample weights to eliminate bias in the income distribution eliminated bias in parental educational attainment and ethnic composition, but did not affect differences in dropout rates. Groups B and C were large enough that if they were treated the same as group A in the weighting process, the resulting dropout distribution would be approximately correct.

Sample weighting involved the following steps:

- Data from the first groups of sample members were used to estimate the income distribution for each disability category that would have been obtained in the absence of type 1 nonresponse bias.
- Respondents from all three groups were combined and weighted up to the universe by disability category. Weights were computed within strata used to select the sample (i.e., LEA size and wealth, student disability category and age).

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* We assumed that nonrespondents who could not be located because LEAs did not provide student names would have chosen to participate at about the same rate as parents in districts in which youth could be identified. The remaining nonrespondents would presumably have been distributed between the three types of nonresponse mentioned above.

- Weights from three low-incidence disability categories (deaf, orthopedically impaired, and visually impaired) were adjusted to increase the effective sample size. These adjustments consisted primarily of slightly increasing the weights of students in larger LEAs and decreasing the weights of students in smaller LEAs. Responses before and after these weighting adjustments were nearly identical. In addition, the three deaf/blind youth from medium-size or smaller districts, who had large weights, were removed from the sample to increase the effective sample size. Thus, NLTS results do not represent the very small number of deaf/blind students in medium-size or smaller LEAs.
- The resulting weights were adjusted so that each disability category exhibited the appropriate income distribution estimated in step 1 above. These adjustments were modest (relative to the range of weights within disability category); the weights of the poorest respondents were multiplied by a factor of approximately 1.6 and the weights of the wealthiest respondents were multiplied by a factor of approximately .7.

Because analyses of postschool outcomes included 1990 data for only a subset of youth, new weights were needed for 1990 data. The first step in weighting the 1,990 out-of-school youth was to identify a group of 3,046 youth who had been enrolled in special education in the 1985-86 school year, who had left secondary school by September 1987, and for whom we had sufficient data so that these youth had been given a weight in the wave 1 analysis. (This did not require that the parent of the youth complete a parent/guardian interview; having a school record abstract was sufficient to receive a wave 1 weight.) Use of this wave 1 weight allowed the results for these 3,046 youth to be projected to the corresponding national population (that is, youth who were enrolled in special education in secondary school in 1985-86 and who had left secondary school by September 1987).

The second step in weighting was to use the group of 3,046 youth and their wave 1 weights to calculate distributions of the following:

- ***Age***—The primary categories were 15 to 17 years, individual years of age from 18 to 22, and a combined category of 23 and above.
- ***Ethnic background***—The primary categories were black; white; hispanic; and a combined category for Indian/Alaskan, Asian/Pacific Islander; and other. In addition there was a category for "don't know" or refusals, and a category for missing (typically because the data collection instrument that was completed for youth did not ask for this information).
- ***School completion status***—The primary categories were graduated, aged out, and a combined category of dropped out, suspended, or expelled. In addition there was a category for "don't know" or "plans to return to school."
- ***Gender***.
- ***Household income in 1986*** (or 1990 if 1986 data was not available). The primary categories were under $12,000; $12,000 to $19,999; $20,000 to $24,999; under $25,000 but otherwise unspecified; $25,000 to $37,999; $38,000 to $50,000; and over $50,000. Those with incomes of $25,000 or over but otherwise unspecified were grouped with those with household incomes between $25,000 and $37,999. In addition there was a category for those with missing information and a category for those who responded "don't know," refused to answer, or indicated that the youth was institutionalized.

The third step was the use of a weighting program to calculate weights for the 1,990 youth so that they matched the demographic distributions of the 3,046 youth. The weighting was accomplished using Deming's algorithm, which iteratively modified the wave 1 weights for the 1,990 youth until they generated demographic marginals that were very similar to those obtained using the 3,046 youth. Each disability class was weighted separately and in general the demographic marginals were matched within a fraction of 1 percent. (Only for the deaf/blind, where sample sizes were very small, did any marginals fail to match within 1 percent, and here they differed no more than 2%.)

Estimation of Standard Errors

The NLTS stratified cluster sample introduces design effects that reduce the precision of estimates for a sample of a given size, compared with a simple random sample. The design effects within the NLTS affect the precision of estimates to varying degrees for different subpopulations and different variables. Pseudo-replication is widely accepted as a variance estimation technique in the presence of design effects. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the numerous NLTS reports and its statistical almanacs. Therefore, pseudo-replication was conducted on a limited number of variables to calibrate a cost-effective approximation formula, using the following procedures:

- A set of 25 variables representing the parent interview, school program survey, and record abstract was identified for the purpose of developing a statistical approximation formula; these included 16 nominal variables and 9 continuous variables.
- Standard errors of the weighted means of the selected variables were estimated in two ways. The first procedure involved pseudo- replication. For each variable, standard errors were calculated for students in each disability category and for the total sample (300 standard errors) using a partially balanced experimental design specifying how youth were to be allocated to 16 half-samples. The sample was split on the basis of the school districts and special schools from which youth originally were sampled. Districts and schools were paired on the basis of enrollment and a measure of poverty, and one member of each pair was assigned to each half-sample. Sample weights were computed for each half-sample as if those in the half-sample were the only study participants.

  The following formula was used to estimate the standard error of the mean for youth in all conditions:

$$\text{Standard error} = [(1/16) \sum_i (M_i - M)^2]^{1/2}$$

  where M_i is the mean calculated for youth in one of the 16 half- samples), M is the mean response calculated from the full sample, and the summation extends over all 16 half-samples. (Note that responses to questions from the school program survey were attached to the records of students in the responding schools so that means for these items were computed using student weights.)

- The second estimation procedure involved an approximation formula based on an estimate of the effective sample size for each disability category and the total sample. The sampling efficiency (E) for a group was calculated using the following formula:

$$E = M_w^2/(M_w^2+S_w^2)$$

where M_w and S_w are the mean and standard deviation of the student weights over all members of the group. The approximation formula for the standard error of the weighted mean of nominal variables is:

$$\text{Standard error} = [P(1-P)/(N \times E)]^{1/2}$$

where P is the full-sample weighted proportion of "yes" responses to a particular question in the group, N is the unweighted number of "yes" or "no" responses to the question in the group, and E is the sampling efficiency of the group. The approximation formula for the standard error of the mean of a continuous variable is:

$$\text{Standard error} = [S_2/(N \times E)]^{1/2}$$

where S_2 is the variance of responses in the group for the continuous variable (computed with frequencies equal to full-sample weights) and N is the unweighted number of respondents to the question in the group. These formulas were used to compute a total of 300 standard errors for the same variables and groups addressed using pseudo-replication.

- To assess the accuracy of the standard errors produced by these formulas, we used scatter plots to compare them with standard errors produced using pseudo-replication. For both nominal and continuous variables, the approximate best fit was a 45 degree line. That is, on average, the formula based on estimates of effective sample size neither systematically overestimated nor underestimated the standard error obtained using pseudo-replication, arguing for use of the more cost-effective estimation formulas. However, because error remains in the estimates that might result in underestimating the true standard errors in some instances, we took a conservative approach and multiplied the standard errors produced using the estimation formulas by 1.25. The vast majority of the standard errors so obtained were larger than the standard errors obtained by pseudo-replication. Thus, standard errors were calculated using the effective sample size estimation formulas and increased by a factor of 1.25.

Creating Comparison Groups from the General Population of Youth

We have created two comparison groups from the general population of youth to use as benchmarks against which to interpret outcomes of youth with disabilities. The first group is a sample of youth from the general population, based on data from the National Longitudinal Survey of Youth (NLSY, U.S. Department of Labor). This group permits us to identify differences between youth with disabilities and the general population. However, we cannot attribute those differences to the presence of a disability because Chapter 2 has illustrated that youth with disabilities differed from youth in the general population on demographic

characteristics that would be expected to influence their outcomes (e.g., gender, ethnicity). Hence, a second comparison group was constructed from the NLSY that has the same distribution as youth with disabilities on important demographic variables. The construction of these two groups is described below.

The NLSY contains data for more than 12,000 noninstitutionalized youth who were between the ages of 13 and 21 in 1979. These youth have been interviewed annually from 1979 to the present concerning a wide variety of topics, including their family background, schooling, employment, marital status, and living arrangements. For the present study, data from the 1979-1983 interviews were used; after those years, youth in the NLSY were generally older than youth in the NLTS.

Because the universe of the NLTS is youth who were in special education programs in 1985-86, while the universe for the NLSY is all youth (regardless of present or past school status), the following steps were taken to achieve comparability. First, only NLSY youth who were currently in school or had been in school during the current or previous academic year were included in the analysis. Second, comparisons were restricted to youth between 15 and 20 years of age. This was done primarily because very few NLSY youth over age 20 met the requirement of having been in secondary school the academic year before the interview. Little is lost by this restriction because the NLTS sample contains very few individuals below the age of 15 and relatively few over age 20.

Thus, we used all the in-school observations and any observations when a person was out of school, but had been in school during the academic year before the interview. There were up to 5 in-school interviews for a given youth. For most people, only one out-of-school observation was included. Two out-of-school interviews could occur if a youth left school during an academic year but before the spring interview. In that case, the interviews of the spring of that academic year and the next spring were included.

NLSY provides sampling weights based on respondents' probability of selection. However, our use of multiple observations per respondent for many analyses resulted in older youth being overrepresented. We corrected this bias by multiplying each individual's weight by:

$$\frac{\text{Weighted N of individuals of the youth's age in 1980}}{\text{Weighted N of the youth's age for all observations in the sample.}}$$

For analyses that used multiple observations, this weight was used. For analyses that used one observation only (for instance, data on arrests came only from the 1980 interview), the original weight supplied by the NLSY was used.

As indicated above, youth with disabilities differ in several demographic characteristics from the general population of youth. The comparison group we constructed to "hold constant" these differences was formed by weighting the NLSY data to match the distribution of selecte

demographic characteristics of youth with disabilities. Using these weights, the comparison population has the same distributions of gender, ethnicity, and head of household's education as the population of youth with disabilities.

Despite our adjustments, some important noncomparabilities remain. They are as follows:

- ***Respondent.*** NLTS interviewed parents, while NLSY interviewed youth. Although there is some evidence that parents in the general population tend to underreport the employment activities of their teenage children (Freeman and Medoff, 1982), the extent to which parents and youth differ in reporting other phenomena is not known.
- ***Month of interview.*** The modal month of interview was August for the NLTS and March for the NLSY. The two outcomes most affected by differences in timing of interview are school completion status and employment status. Fortunately, NLSY data included youths' employment status as of August 15, and we were able to construct a variable on school completion status as of the summer after the interview. However, most data on occupational distributions, part-time/full-time status, and wages come from the summer for NLTS youth and the spring for NLSY youth.
- ***Year of interview.*** NLTS interviews took place in 1987, while NLSY data come from 1979-1982. Readers should be sensitive to the fact that period effects may have influenced some variables. We adjusted for period effects for only one variable, wages, by operationalizing wages as the percent of the population earning the minimum wage or less.
- ***Time out of school.*** The most important consequence of differences in the month of interview affect analyses of data for youth who were no longer in secondary school. More than three-fourths (76%) of NLSY secondary school graduates in the sample (weighted) had been out of school between 9 and 11 months when they were interviewed. In contrast, about 56% of NLTS graduates had been out of school about 2 months, and about 44% had been out of school about 14 months.
- ***Unmeasured or uncontrolled demographic differences.*** The groups may continue to differ in unmeasured ways or in ways that were not adjusted for in the reweighting. For example, we were not able to weight the comparison population by urbanicity, despite knowing that NLTS and NLSY samples differ significantly on this factor, because of noncomparability of the measures of urbanicity in the two data sets.
- ***Exact wording of questions and response categories.*** Wording of questions and response categories differed between the NLTS and the NLSY. Considerable research has shown responses to items can be affected by these types of differences (e.g., Schwarz and Hippler, 1990).

National Longitudinal Transition Study of Special Education Students

National Longitudinal Transition Study

Reports and Papers Based on the NLTS

Papers available:

- "The Early Work Experiences of Youth with Disabilities: Trends in Employment Rates and Job Characteristics." R. D'Amico and C. Marder, September 1991. 55 pp. $15.00. [Order No. 147]

- "Dropouts with Disabilities: What Do We Know? What Can We Do?" M. Wagner, September 1991. 80 pp. $15.00. [Order No. 146]

- "How Well Are Youth with Disabilities Really Doing Compared with the General Population?" C. Marder, 1991. 21 pp. $15.00. [Order No. 144]

- "Youth with Disabilities: How Are They Doing? The First Comprehensive Report from the National Longitudinal Transition Study of Special Education Students." M. Wagner et al. September 1991. 600 pp. $40.00. [Order No. 135]

- "Parents' Reports of Students' Involvement with Vocational Rehabilitation Agencies in the First Years After Secondary School." M. Wagner and R. Cox, 1991. 50 pp. $12.00. [Order No. 134]

- "The Relationship Between Social Activities and School Performance for Secondary Students with Learning Disabilities." L. Newman, 1991. 52 pp. $10.00. [Order No. 133]

- "The Benefits Associated with Secondary Vocational Education for Young People with Disabilities." M. Wagner, 1991. 66 pp. $10.00. [Order No. 132]

- "The National Longitudinal Transition Study of Special Education Students: Report on Sample Design and Limitations, Wave 1 (1987)." H. Javitz and M. Wagner, 1990. 71 pp. $18.00. [Order No. 131]

- "The National Longitudinal Transition Study of Special Education Students: Report on Procedures for the First Wave of Data Collection (1987)." M. Wagner, L. Newman, and D. Shaver, 1989 (includes data collection instruments). 280 pp. $25.00. [Order No. 126]

- "The School Programs and School Performance of Secondary Students Classified as Learning Disabled: Findings from the National Longitudinal Transition Study of Special Education Students." M. Wagner, 1990. 27 pp. $10.00 [Order No. 125]

- "Youth with Disabilities During Transition: An Overview of Descriptive Findings from the National Longitudinal Transition Study," by M. Wagner. Prepared for the annual meeting of the American Educational Research Association, San Francisco, 1989. 25 pp. (An overview of reports no. 115, 116, 117, and 118, released with the approval of the U.S. Department of Education.) $10.00. [Order No. 119]

The NLTS is being conducted by SRI International under contract to the Office of Special Education Programs of the U.S. Department of Education. Data were collected from more than 8,000 youth in 1987 from parent interviews, a survey of school staff, and from their school records. The youth were ages 15 to 23 when data were collected; about two-thirds were in secondary school, and one-third had exited secondary school. Data have been weighted to represent the national secondary school-age special education population.

- "The Transition Experiences of Youth with Disabilities: A Report from the National Longitudinal Transition Study." M. Wagner, 1989. 42 pp. $10.00. [Order No. 118]

- "Making the Transition: An Explanatory Model of Special Education Students' Participation in Postsecondary Education." P. Butler-Nalin, C. Marder, and D. Shaver, 1989. $10.00. [Order No. 117]

- "Educational Programs and Achievements of Secondary Special Education Students: Findings from the National Longitudinal Transition Study." M. Wagner and D. Shaver, 1989. 41 pp. $10.00. [Order No. 116]

- "Dropouts: The Relationship of Student Characteristics, Behaviors, and Performance for Special Education Students." P. Butler-Nalin and C. Padilla, 1989. 41 pp. $10.00. [Order No. 115]

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